

IV

Related Sequences

Beginning in 1993, this section of the compendium turned its focus toward cellular and viral factors that interact with HIV. Many of these factors are discussed at length by K.-T. Jeang, one of the database editors, in the 1994 release. In this 1995 update we present amino acid sequences of some cellular factors newly reported to interact with HIV proteins or nucleic acids. Be forewarned that some of these claims are controversial. Moreover, it is possible that we have overlooked some cofactor sequences, in which case upon hearing of those we will place them onto the Web site (<http://hiv-web.lanl.gov>). Rajesh Krishnan and Teh Jeang at NIAID/NIH were instrumental in compiling this collection of sequences.

Note that many of these proteins are equivocally named. RIP can mean vpR-interacting protein or Rev-interacting protein (or repeat-induced point mutation process in an unrelated context). TAP is used as a name for several proteins with different functions; here TAP, also known as SF2 (splicing factor 2) associated factor, stands for TAR-associated protein.

PART IV Related Sequences

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EIF5A

LOCUS HSU17969 4862 bp DNA PRI 16-DEC-1994
DEFINITION Human initiation factor eIF-5A gene, complete cds.
ACCESSION U17969
REFERENCE 1 (sites)
AUTHORS Koettnitz,K., Woehl,T., Kappel,B., Lottspeich,F., Hauber,J. and Bevec,D.
TITLE Identification of a new member of the human initiation factor eIF-5A gene family
JOURNAL Unpublished
REFERENCE 2 (bases 1 to 4862)
AUTHORS Werner,F.
TITLE Direct Submission
JOURNAL Submitted (01-DEC-1994) Werner F., Sandoz Research Institute, Mrg-Ir, Brunnerstrasse 59, Vienna, Austria, A-1235
COMMENT The eIF-5A protein (eukaryotic initiation factor 5A) is an essential cofactor for HIV Rev function (Steinkasserer et al., Genomics 25:749,1995; Katahira et al., J.Virol. 69:3125, 1995; Ruhl et al., J. Cell Biol. 123:1309,1993).
NCBI gi: 602244
FEATURES Location/Qualifiers
source 1..4862
/organism="Homo sapiens"
/sex="female"
/tissue_type="placenta"
exon 1..125
/number=1
intron 126..1974
/number=1
exon 1975..2159
/number=2
CDS join(1995..2159,3372..3476,3704..3835,3932..3994)
/note="NCBI gi: 602245"
/codon_start=1
/function="initiation factor"
/evidence=experimental
/product="eIF-5A"
/db_xref="PID:g602245"
/translation="MADDLDFETGDAGASATFPMQCSALRKNGFVVLKGRPCKIVEMS
TSKTGKHAKVHLVGIDIFTGKKYEDICPSTHMDVPNIKRNDFQLIGIQDGYLSLL
QDSGEVREDLRLPEGDLGKEIEQKYDCGEEILITVLSAMTEEEAAVAIKAMAK"

LOCUS HUMRABCCF 2583 bp DNA PRI 24-AUG-1995
 DEFINITION Homo sapiens cellular co-factor (RAB) gene, complete cds.
 ACCESSION L42025
 REFERENCE 1 (bases 1 to 2583)
 AUTHORS Bogerd,H.P., Fridell,R.A., Madore,S. and Cullen,B.R.
 TITLE Identification of a novel cellular cofactor for the Rev/Rex class
 of retroviral regulatory proteins
 JOURNAL Cell 82 (3), 485-494 (1995)
 MEDLINE 95360992
 REFERENCE 2 (bases 1 to 2583)
 AUTHORS Cullen,B.R.
 TITLE Direct Submission
 JOURNAL Submitted (11-AUG-1995) Bryan R. Cullen, Howard Hughes Medical
 Institute and Department of Genetics, Duke University Medical
 Center, Durham, NC 27710, USA
 COMMENT The RAB protein (Rev/Rex activation domain-binding protein) binds
 to Rev and Rex activation domains in vivo and in vitro. It appears
 to enhance Rev activity, i.e., export of unspliced and singly-spliced
 HIV messages, when the latter is bound to RNA.
 NCBI gi: 945222
 FEATURES Location/Qualifiers
 source 1..2583
 /organism="Homo sapiens"
 /clone="RAB"
 /cell_line="CEM-SS"
 /cell_type="T-cell"
 /sequenced_mol="DNA"
 mRNA <1..>2583
 /gene="RAB"
 CDS 244..1932
 /gene="RAB"
 /note="Rev/Rex activation domain-binding protein; NCBI
 gi: 945223"
 /codon_start=1
 /function="cellular co-factor"
 /db_xref="PID:g945223"
 /translation="MAASAKRKQEEKHLKMLRDMTGLPHNRKCFDCDQRGPTYVNMTV
 GSFVCTSCSGSLRGLNPPHRVKSIIMTTFTQQEIIFLQKHGNEVCKQIWLGLFDRSS
 AIPDFRDPQKVKEFLQEKYEKKRWYVPPEQAKVVASVHASISGSSASSTSSTPEVKPL
 KSLLGDSAPTLHLNKGTPSQSPVVGRSQQQQEKKQFDLLSDLGSDIFAAAPAPQSTAT
 ANFANFAHFNSHAAQNSANADFANFDAFGQSSGSSNFGGFPTASHSPFQPQTGGSA
 SVNANFAHFDFNFPKSSADFGTFTNTSQSHQTASA VSKVSTNKAGLQTADKYAALANLD
 NIFSAGQGGDQGSGFGTTGKAPVGSVSVPSQSSASSDKYAALAEELDSVSSAATSSN
 AYTSTSNA SNVFGTVPVVASAQ TQPASSSVPAPFGATPSTNPVAAAGPSVASSTNP
 FQTNARGATAATFGTASMSMPTGFGTPAPYSLPTSFSGSFQQPAFPQA AFPQQTA
 FQQPNGAGFAAFGQTKPVVTPFGQVAAGVSSNP FMTGQFPTGSSSTNPFL"

hRIP

LOCUS HSRNANLP 2414 bp RNA PRI 17-AUG-1995
DEFINITION H.sapiens mRNA for nucleoporin-like protein.
ACCESSION X89478
FIELD NID
g950050
KEYWORDS nucleoporin-like protein.
SOURCE human.
ORGANISM Homo sapiens
Eukaryota; mitochondrial eukaryotes; Metazoa; Chordata;
Vertebrata; Osteichthyes; Sarcopterygii; Mammalia; Eutheria;
Primates; Catarrhini; Hominidae; Homo.
REFERENCE 1 (bases 1 to 2414)
AUTHORS Fritz,C.C., Zapp,M.L. and Green,M.R.
TITLE A human nucleoporin-like protein that specifically interacts with
HIV Rev
JOURNAL Nature 376 (6540), 530-533 (1995)
MEDLINE 95364930
REFERENCE 2 (bases 1 to 2414)
AUTHORS Green,M.R.
TITLE Direct Submission
JOURNAL Submitted (07-JUL-1995) to the EMBL/GenBank/DDBJ databases. M.R.
Green, Univ. of Massachusetts Medical Center, Program in Molecular
Medicine, 373 Plantation Street, Worcester, MA 01605, USA
COMMENT HRIP (human Rev interacting protein) specifically interacts with the
HIV Rev effector domain. The hRIP is homologous to nucleoporins.
NCBI gi: 950050
FEATURES Location/Qualifiers
source 1..2414
/organism="Homo sapiens"
CDS 67..1755
/note="pid:e188464; NCBI gi: 950051"
/codon_start=1
/product="nucleoporin-like protein"
/db_xref="PID:g950051"
/translation="MAASAKRKQEEKHLKMLRDMTGLPRNRKCFDCDQRGPTYVNMTV
GSFVCTSCSGSLRGLNPPhRVKSISMTTFTQQEI^EFLQKHGNEVCKQIWLGLFDRSS
AIPDFRDPQKVKEFLQEKYEKKRWYVPPEQAKVVASVHASISGSSASSTSSTPEVKPL
KSLLGDSAPTLHLNKGTPSQSPVVGRSQQQQEKQFDLLSDLGSDIFAAAPAPQSTAT
ANFANFAHFNSHAAQNSANADFANFDAFGQSSGSSNFGGFPТАSHSPFQPQTGGSAA
SVNANFAHFDNFPKSSADFGTFNTSQSHQTASAVSKVSTNKAGLQTADKYAALANLD
NIFSAGQGGDQGSGFGTTGKAPVGSVSVPSQSSASSDKYAALAEELDSVSSAATSSN
AYTSTSNSASSNVFGTVPVVASAQTQPASSVPAFPGRTPSTNPVAAAGPSVASSTNP
FQTNARGATAATFGTASMSMPTGFGTPAPYSLPTSFSGSFQQPAFPQAQAFPQQTAFS
QQPNNGAGFAAFGQTKPVVTPFGQVAAGVSSNPFM^TGAPTGFQPTGSSSTNPFL"

LOCUS HUMPPARGB 1811 bp mRNA PRI 01-NOV-1995
 DEFINITION *H. sapiens peroxisome proliferator activated receptor gamma*, complete cds.
 ACCESSION L40904
 REFERENCE 1 (bases 1 to 1811)
 AUTHORS Greene,M.E., Blumberg,B., McBride,O.W., Yi,H.F., Kronquist,K., Kwan,K., Hsieh,L., Greene,G. and Nimer,S.D.
 TITLE Isolation of the human peroxisome proliferator activated receptor gamma cDNA: expression in hematopoietic cells and chromosomal mapping
 JOURNAL Gene Expr. 4 (4-5), 281-299 (1995)
 MEDLINE 95307078
 REFERENCE 2 (bases 1 to 1811)
 AUTHORS Qi,J.S., Desai-Yajnik,V., Greene,M.E., Raaka,B.M. and Samuels,H.H.
 TITLE The ligand-binding domains of the thyroid hormone/retinoid receptor gene subfamily function in vivo to mediate heterodimerization, gene silencing, and transactivation
 JOURNAL Mol. Cell. Biol. 15 (3), 1817-1825 (1995)
 MEDLINE 95166267
 COMMENT As reported by Desai-Yajnik and coworkers, J. Virol. 69:5103-5112, 1995, this protein binds to thyroid hormone response elements (TREs) embedded within NF-Kappa B and Sp1 motifs. The latter interaction, but not the former, is Tat-dependent, and therefore interaction with Tat is suggested. The 50-aa N-terminal region of T3R alpha, which is said to interact with TFIIIB, is critical for the Tat-dependent and independent effects.
 Full length receptor cDNA first isolated and sequenced Jan 9 1991.
 Patent applied for.
 NCBI gi: 722619
 FEATURES
 CDS Location/Qualifiers
 173..1609
 /gene="PPARG"
 /map="3p25"
 /note="NCBI gi: 722620"
 /codon_start=1
 /function="ligand activated transcription factor"
 /product="peroxisome proliferator activated receptor gamma"
 /db_xref="PID:g722620"
 /translation="MTMVDTEIAFWPTNFGISSLVMDHSHSFDIKPFTTVDFSS
 ISTPHYEDIPTRDPVVADYKYDLKLQEYQSAIKVEPASPPYYSEKTQLYNKPHEEP
 SNSLMAIECRVCGDKASGFHYGVHACEGCKGFFRRTIRLKLIYDRCDLNCRHKKSRN
 KCQYCRFQKCLAVGMSHNAIRFGRIAQAEEKEKLLAEISSDIDQLNPESADLRQALAKH
 LYDSYIKSFPLTKAKARAILTGKTTDKSPFVIYDMNSLMMGEDKIKFKHITPLQEQQSK
 EVAIRIFQGCQFRSVEAVQEITEYAKSIPGFVNLDLNDQVTLLKYGVHEIIYTMLASL
 MNKGVLISEGQGFMTREFLKSLRKPGDFMEPKFEFAVKFNALDDSLAIFIAVI
 ILSGDRPGLLNVKPIEDIQDNLLQALELQLKLNHPESSQLFAKLLQKMTDLRQIVTEH
 VQLQVIKKTETDMSLHPPLLQEIQYKDLY"
 polyA_site 1811
 /gene="PPARG"
 /map="3p25"

HT2A

LOCUS HSU18543 2424 bp mRNA PRI 07-APR-1995
DEFINITION Human zinc-finger protein mRNA, complete cds.
ACCESSION U18543
REFERENCE 1 (bases 1 to 2424)
AUTHORS Fridell,R.A., Harding,L.S., Bogerd, H.P. and Cullen,B.R.
TITLE Identification of a novel human zinc finger protein that specifically interacts with the activation domain of lentiviral Tat proteins.
JOURNAL Virology 209: 347-357 (1995)
REFERENCE 2 (bases 1 to 2424)
AUTHORS Fridell,R.A.
TITLE Direct Submission
JOURNAL Submitted (13-DEC-1994) Robert A. Fridell, Genetics, Howard Hughes Medical Institute at Duke Univ. Medical Center, DUMC, Durham, NC 27710, USA
COMMENT The Tat activation domain, a functionally-conserved region comprising cysteine-rich motifs, interacts with this human zinc finger protein designated HT2A. HT2A, a nuclear protein, is also found to interact with HIV-2 and EIAV Tat activation domains in vivo, according to [1]. HT2A is a member of the C3HC4 family of zinc finger proteins.
NCBI gi: 758422
FEATURES Location/Qualifiers
source 1..2424
/clone="HT2A"
/organism="Homo sapiens"
CDS 111..2072
/note="NCBI gi: 758423"
/codon_start=1
/product="zinc-finger protein"
/db_xref="PID:g758423"
/translation="MAAAAASHLNLDALREVLECPICMESITEEQLRPKLLHCGHTIC RQCLEKLLASSINGVRCPFCSKITRITSLTQLTDNLTVLKIIDTAGLSEAVGLLMCRS CGRRRLPRQFCRSCGVLCEPCREADHQPPGHCTLVPKEAAEERRDFGEKLTRLRELM GELQRRAKAALEGVSKDLQARYKAVLQEYHEERRVQDELARSRKFFTGSILAEVEKSNS QVVEEQSYLLNIAEVQAVSRCDYFLAKIKQADVALLEETADEEEPELTASLPRELTQ DVELLKVGHVGPLQIGQAVKKPRTVNVEDSWAMEATASAATSVTFREMDSPEEVVA SPRASPAKQRGPPEAASNIIQQCLFLKKMGAKGSTPGMFNLPVSLYVTSQGEVLVADRGN YRIQVFTRKGFLKEIRRSPSGIDSFVLSFLGADLPNLTPLSVAMNCQGLIGVTDSYDN SLKVYTLGDGHCVACHRSQLSKPWGITALPSGQFVTDVEGGKLWCFTVDRGSGVVKYS CLCSAVRPKFVTCDAEGTVYFTQGLGLNLENRQNEHHLEGGFSIGSVGPDGQLGRQIS HFFSENEDFRCIAGMCVDARGDLIVADSSRKEILHFPKGGGYSVLIREGLTCPGVIAL TPKGQLLVLDCWDHCIKIYSYHLRRYSTP"

LOCUS HUMSF2P33 1428 bp mRNA PRI 24-NOV-1993
 DEFINITION Human SF2p33 mRNA, complete cds.
 ACCESSION M69040
 REFERENCE 1 (bases 1 to 1428)
 AUTHORS Krainer,A.R., Mayeda,A., Kozak,D. and Binns,G.
 TITLE Functional expression of cloned human splicing factor SF2: homology to RNA-binding proteins, U1 70K, and Drosophila splicing regulators
 JOURNAL Cell 66, 383-394 (1991)
 MEDLINE 91309150
 COMMENT SF2p33 is an essential pre-mRNA splicing factor, which can also affect alternative 5' splice site selection in vitro by stimulating the use of proximal 5' splice sites.
 (Krainer, A.R., Conway, G.C., and Kozak, D. (1990) Purification and Characterization of SF2, a Human Pre-mRNA Splicing Factor. Genes Dev. 4, 1158-1171; Krainer, A.R., Conway, G.C., and Kozak, D. (1990) The Essential Pre-mRNA Splicing Factor SF2 Influences 5' Splice Site Selection by Activating Proximal Sites. Cell 62, 35-42). This factor is also known as ASF (Ge, H., and Manley, J.L. (1990) A protein Factor, ASF, Controls Alternative Splicing of SV40 Early Pre-mRNA In Vitro. Cell 62, 25-34). SF2 p33 consists of two polypeptides of apparent molecular weight 33 kd, approximately, although their predicted molecular weight is 27,744 daltons. The two forms appear to differ by the extent of post-translational modification, which includes phosphorylation. SF2p33 binds RNA and promotes the annealing of complementary RNAs. It is required for assembly of pre-spliceosome complexes. The N-termini of the HeLa polypeptides are blocked.
 While the p32 (or p33) protein copurifies with SF2, there is no evidence to date that it functions as a splicing factor; rather, it appears to be identical to a protein named TAP (tat-associated protein; Yu et al., J. Virol. 69:3007, 1995). The same protein, named as YL2, earlier was thought to modulate Rev (Luo et al., J. Virol. 68:3850, 1994).
 NCBI gi: 338046
 FEATURES Location/Qualifiers
 source 1..1428
 /organism="Homo sapiens"
 /sex="female"
 5'UTR <1..124
 CDS 125..871
 /note="NCBI gi: 338047"
 /codon_start=1
 /function="pre-mRNA splicing factor"
 /product="SF2p33"
 /db_xref="PID:g338047"
 /translation="MSGGGVIRGPAGNNDCRIYVGNLPPDIRTKDIEDVFYKYGAIRDIDLKNRRGGPPFAFVEFEDPRDAEDAVYGRDGYDYDGYRLRVEFPRSGRGTGRGGGGGGGGGGAPRGRYGPPSRRSENRVVVSGLPPSGSWQDLKDHMREAGDVCYADVYRDGTGVVEFVRKEDMTYAVRKLDNTKFRSHEGETAYIRVKVDGPRSPSYGRSRSRSRSRSRSRNSRSRSYSPPRSRGSPRYSPRHSRSRSRT"

MNSOD

LOCUS HSMNSOD 977 bp RNA PRI 12-NOV-1990
DEFINITION Human mRNA for mangano-superoxide dismutase (Mn-SOD).
ACCESSION X14322
REFERENCE 1 (bases 1 to 977)
AUTHORS Wispe,J.R., Clark,J.C., Burhans,M.S., Kropp,K.E., Korfhagen,T.R.
and Whitsett,J.A.
TITLE Synthesis and processing of the precursor for human
mangano-superoxide dismutase
JOURNAL Biochim. Biophys. Acta 994 (1), 30-36 (1989)
MEDLINE 89076921
COMMENT Steady-state levels of MN-SOD mRNA are lower in HeLa-tat cell lines
than in parental lines and enzyme activity is reduced by about 50%.
The tat effect is not seen with Cu- and Zn-dependent SODs. As a
consequence, HeLa-tat cells show signs of oxidative stress (Flores
et al., PNAS 90:7632,1993).
NCBI gi: 34706
FEATURES Location/Qualifiers
source 1..977
/organism="Homo sapiens"
/tissue_type="liver"
/clone_lib="lambda gt11"
/clone="lambda 105"
mRNA 1..977
/gene="Mn-SOD"
/evidence=experimental
transit_peptide 96..167
/gene="Mn-SOD"
/evidence=experimental
CDS 96..764
/gene="Mn-SOD"
/note="NCBI gi: 34707"
/codon_start=1
/product="Manganese superoxide dismutase"
/db_xref="PID:g34707"
/translation="MLSRAVCGTSRQLAPALGYLGSRQKHSLPDLPDYGALEPHINA
QIMQLHHSKHAAAYVNVLNVTEEKYQEALAKGDTAQTALQPALKFNGGGHINHSIFW
TNLSPNGGGEPKGELLEAIKRDGFSDKFKEKLTAASVGVQGSGWGWLGFNKERGHLQ
IAACPNDPLQGTTGLIPLLGIDVWEHAYYLQYKNVRPDYLKAIWNVINWENVTERYM
ACKK"
mat_peptide 168..761
/gene="Mn-SOD"
/evidence=experimental
/product="Manganese superoxide dismutase"

LOCUS HUMHIP116A 3418 bp mRNA PRI 25-MAY-1995
 DEFINITION Human ATPase, DNA-binding protein (HIP116) mRNA, 3' end.
 ACCESSION L34673
 REFERENCE 1 (bases 1 to 3418)
 AUTHORS Sheridan, P.L., Schorpp, M., Voz, M.L. and Jones, K.A.
 TITLE Cloning of an SNF2/SWI2-related protein that binds specifically to the SPH motifs of the SV40 enhancer and to the HIV-1 promoter
 JOURNAL J. Biol. Chem. 270 (9), 4575-4587 (1995)
 MEDLINE 95181452
 COMMENT This protein binds to the TATA/inhibitor region of the HIV-1 promoter. It contains a C3hC4 zinc-finger motif interspersed between ATPase motifs. The authors speculate that this protein can affect transcription by acting as a DNA-binding ATPase.
 NCBI gi: 531195
 FEATURES Location/Qualifiers
 source 1..3418
 /organism="Homo sapiens"
 /cell_line="HeLa S3"
 /sequenced_mol="cDNA to mRNA"
 5 'UTR 1..177
 mRNA 1..3418
 CDS 178..3207
 /gene="HIP116"
 /note="SNF2/SWI2-related protein; DNA-binding protein;
 NCBI gi: 531196"
 /codon_start=1
 /function="putative transcription factor"
 /product="ATPase"
 /db_xref="PID:g531196"
 /translation="MSWMFKRDPVWKYLQTVQYGVHGNFPRLSYPTFFPRFEFQDVIP
 PDDFLTSDEEVDSVLFGSLRGHVVGLYYTGVVNNNEMVALQRDPNNPYDKNAIKVNN
 VNGNQVGHKLKELAGALAYIMDNKLAQIEGVVPGANNAFTMPLHMTFWGKEENRKAV
 SDQLKKHGFKLGPAPKTILGFNLESGWGSGRAGPSYSMPVHAAVQMTTEQLKTEFDKLF
 EDLIKEDDKTHEMPEAEAITEPLLPHQKQALAWMVSRENSKELPPFWEQRNDLYNTIT
 NFSEKDRPENVHGGILADDMGLGKTLTAIAVILTNFHGRPLPIERVKKNLLKEYNV
 NDDSMKLGGNNTSEKADGLSKDASRCSEQPSISDIKEKSFKRMSELSTS PKRRKTA
 QYIESSDSEEIETSELPQKMKGKLKNVQSETKGRAKAGSSKVIEDVAFACALTSSVPT
 TKKKMLKGACAVEGSKKTDTVEERPRTTLIICPLSVLSNWIDQFGQHIKSDVHLNFYV
 YYGPDRIREPALLSKQDIVLTYYNILTHDYGTGKGDSPLSHIRWLRLVILDEGHAI
 RNPN AQQTKAVLDLESERRWVLGTPIQNSLKDLWSLLSFLKLKPFIIDREWHR
 TIQRPVTM GDEGGLRRLQSLIKNITLRRRTKTSKIKGKPVLELPERKVFIQHITLS
 DEERKIYQSVK NEGRATIGRYFNEGTVLAHYADVLGLLLRLRQICCHTYLL
 TNNAVSSNGPSGNDTPEEL RKKLIRKMKLILSSGSDECAICLDSLTVPV
 ITHCAHVFCCKPCICQVIQNEQPHAKCP LCRNDIHEDNLLECPPEELARD
 SEKKSDMEWTSSSKINALMHALTDLRKKNPNIKSLV VSQFTTFLSLIEIPL
 KASGFVFTRLDGSMAQKKRVESIQCFQNT
 EAGSPTIMLLSLKA GGVGLNLSAASRVFLMDPAWNPAAEQCFDRCHRLGQKQEVI
 ITKFIVKDSVEENMLK IQNKKRELAAGAFGTKKPNADEM
 QAKINEIRTIDL"

HHV6O1

LOCUS HHV6DR 3927 bp DNA VRL 22-DEC-1994
DEFINITION Human Herpesvirus Type 6 DNA.
ACCESSION X73675
REFERENCE 1 (bases 1 to 3927)
AUTHORS Thompson,J., Choudhury,S., Kashanchi,F., Doniger,J., Berneman,Z., Frenkel,N. and Rosenthal,L.J.
TITLE A transforming fragment within the direct repeat region of human herpesvirus type 6 that transactivates HIV-1
JOURNAL Oncogene 9 (4), 1167-1175 (1994)
MEDLINE 94181269
REFERENCE 2 (bases 1 to 3927)
AUTHORS Thompson,J.T.
TITLE Direct Submission
JOURNAL Submitted (28-JUN-1993) to the EMBL/GenBank/DDBJ databases. J.T. Thompson, Georgetown University Medical Center, Dept of Microbiology, 3900 Reservoir Rd NW, Washington DC 20007, USA
COMMENT Orf 1 of HHV-6 product, 357 aa, transactivates HIV-1 LTR by 10- to 15-fold. Minimal promoter elements are involved. See Kashanchi et al., Virology 201:95,1994. Only the translation of Orf 1 of this 3927 cds is shown below.
NCBI gi: 469952
FEATURES Location/Qualifiers
source 1..3927 /organism="Human herpesvirus type 6"
/variety="U1102"
/clone="pNF1022"
/map="DRL & UNIQUE junction"
CDS 903..1976 /note="ORF1; NCBI gi: 469953"
/codon_start=1
/db_xref="PID:g469953"
/translation="MRHLPFHGMPLRVQMFCAFFIRSETTDKNKATPTITFMVSCCFV
WVKRLFYRVGRIHHVQSLSYARPITALDSCLYVCCGYGEKLQPVGFKSYVTNSQLDT
LRVLLVGKDGAHYVHHMRAARLCRLASSTTEFTRRLQRDAVYEEEDLELPDQRMCGT
NARHLFDVIAAAADEHNLLTVGGLCQTHAGVSCNLLETVGDPWTAVPAARMLTVPQV
QYRLWPEARRDLRRHYAGHPLGPWLVCVGLSRERETQKPSPIRTTVGNVPTPGPRE
VEIAWVVLTLAGPLLAFWPDTGKICRLANSFSTLWKGPRAMRGHWTYSAPGRHLPGD
AWPLCEHVRPQVGKLPKRAYLD"

LOCUS HSU23731 1245 bp mRNA PRI 19-JUL-1995
 DEFINITION Human TAR DNA-binding protein-43 mRNA, complete cds.
 ACCESSION U23731
 REFERENCE 1 (bases 1 to 1245)
 AUTHORS Ou,S.H., Wu,F., Harrich,D., Garcia-Martinez,L.F. and Gaynor,R.B.
 TITLE Cloning and characterization of a novel cellular protein, TDP-43, that binds to human immunodeficiency virus type 1 TAR DNA sequence motifs
 JOURNAL J. Virol. 69 (6), 3584-3596 (1995)
 MEDLINE 95264449
 REFERENCE 2 (bases 1 to 1245)
 AUTHORS Ou,S.-H.I.
 TITLE Direct Submission
 JOURNAL Submitted (27-MAR-1995) S.-H.I. Ou, Internal Medicine, University of Texas Southwestern, 5323 Harry Hines Blvd., Dallas, TX 75209, USA
 COMMENT TDP-43 is a Tar DNA-binding protein of weight 43 kDa. It is said to bind to pyrimidine-rich motifs in the DNA and not to Tar RNA. It represses in vitro transcription in the presence and absence of Tat by apparently altering transcription complexes.
 NCBI gi: 901997
 FEATURES Location/Qualifiers
 source 1..1245
 /organism="Homo sapiens"
 /cell_line="HeLa cells"
 CDS 1..1245
 /note="TDP-43 binds to HIV-1 LTR TAR DNA region and can repress HIV-1 transcription; TDP-43; NCBI gi: 901998"
 /codon_start=1
 /product="TAR DNA-binding protein-43"
 /db_xref="PID:g901998"
 /translation="MSEYIRVTEDEDENDEPIEIPSEDDGTVLLSTVTAQFPAGCLRYRNPVSQCMRGVRLEGILHAPDAGWGNLVYVVNYPKDNKRKMDETDA
 SAVKVKRAVQKTS
 DLI
 VGLPWTTEQDLKEYFSTFGEVLMVQVKDLKTGHSGFGFVRFTEYETQVK
 VMSQRHMIDGRWCDC
 CKLPSNKQSQDEPLRSRKVFVGRCTEDMTEDELREFFSQYGDVM
 DV
 FIPKP
 FRAFVTFADDQIAQSLCGEDLI
 IKGISVHISNAEPKHNSNRQLERSGRF
 GGNPGGGFGNQGGFGNSRG
 GGAGLGN
 NQGSNMGGMNFGAFS
 INPAMMAAAQAA
 ALQSSW
 GMMGMLASQQNQSGPSGN
 NQGNQM
 REPNQAF
 GSGNN
 SYSGSN
 SGAAIGWGSASNAG
 SGSGFNGGF
 GSSMDSKSSGWGM"

PKR

LOCUS HUMPEIF2A 2392 bp mRNA PRI 24-MAY-1994
DEFINITION Human P1/eIF-2a protein kinase mRNA, complete cds.
ACCESSION M85294
REFERENCE 1 (bases 1 to 2392)
AUTHORS Thomis,D.C., Doohan,J.P. and Samuel,C.E.
TITLE Mechanism of interferon action: cDNA structure, expression, and regulation of the interferon-induced, RNA-dependent P1/eIF-2 alpha protein kinase from human cells
JOURNAL Virology 188 (1), 33-46 (1992)
MEDLINE 92230231
REFERENCE 2 (sites)
AUTHORS McCormack,S.J., Thomis,D.C. and Samuel,C.E.
TITLE Mechanism of interferon action: identification of a RNA binding domain within the N-terminal region of the human RNA-dependent P1/eIF-2 alpha protein kinase
JOURNAL Virology 188 (1), 47-56 (1992)
MEDLINE 92230247
REFERENCE 3 (bases 1 to 2392)
AUTHORS Samuel,C.E.
TITLE Direct Submission
JOURNAL Submitted (04-JUN-1992) Charles E. Samuel, Department of Biology, University of California, Santa Barbara, CA 93106, USA
COMMENT This double-stranded RNA-dependent enzyme is called PKR, DAI, or dsI kinase. When induced by interferon and activated by RNA, phosphorylation of the alpha subunit of eIF-2 by this P1/eIF-2a protein kinase leads to inhibition of protein synthesis initiation. PKR binds TAR (Maitra et al., Virol. 204:823,1994; Silvastra et al., J. Biol. Chem. 270:16619, 1995; Clemens et al., Biochemie 76:770, 1994) and Tat (McMillan et al., Virol. 213:413,1995).
NCBI gi: 189781
FEATURES Location/Qualifiers
source 1..2392
/organism="Homo sapiens"
CDS 31..1686
/gene="P1/eIF-2a protein kinase"
/note="NCBI gi: 189782"
/codon_start=1
/product="P1/eIF-2a protein kinase"
/db_xref="PID:g189782"
/translation="MAGDLSAGFFMEELNTYRQKQGVVLKYQELPNNSGPPHDRRFTFQ
VIIDGREFPEGEGRSKKEAKNAAKLA
VEILNKEKKAVSPLLTTTNSSEGLSMGNYI
GLINRIAQKKRLTVNYEQCASGVHGPEGFHYKCKMGQKEYSIGTGSTKQEA
KQLAAKLAYLQILSEETSVKSDYLSGSFATTCESQSNSLVTSTLAS
ESSSEGDFSA
DTSADTSEINSN
SDSLN
SSLLMNGLRNNQRKA
KRS
LAPRFDLPDMKETK
YTVDKRFGMD
FKEIE
LIGSG
GFGQVFKAKHRIDGKTYVIKRV
KYNNEKA
E
REV
K
ALAKLD
DHVNIVHYNGCW
DGFDYDP
ET
S
DD
S
L
E
SS
D
YDP
EN
SK
N
SS
RS
KT
K
CLF
I
QME
FCD
KG
TLE
QW
IE
K
RR
GE
K
LD
KV
L
AL
EL
FE
Q
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KG
V
DY
IHS
KKL
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H
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PS
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I
FL
V
D
TK
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VK
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DF
GL
V
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SL
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E
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S
E
I
L
R
L
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V
W
K
K
S
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C"

LOCUS HUM49KDA 2201 bp mRNA PRI 30-NOV-1995
 DEFINITION Human 49 kDa protein mRNA, complete cds.
 ACCESSION L22009
 REFERENCE 1 (bases 1 to 2201)
 AUTHORS Honore,B., Rasmussen,H.H., Vorum,H., Dejgaard,K., Liu,X., Gromov,P., Madsen,P., Gesser,B., Tommerup,N. and Celis,J.E.
 TITLE Heterogeneous nuclear ribonuclearproteins H, H', and F are members of a ubiquitously expressed subfamily of related but distinct proteins encoded by genes mapping to different chromosomes
 JOURNAL J. Biol. Chem. 270 (48), 28780-28789 (1995)
 COMMENT Reported to be an RRE-binding protein by Xu et al., J. Biomed. Sci. in press, 1996 (Wong-Staal, UCSD, La Jolla, Ca.).
 NCBI gi: 347313
 FEATURES Location/Qualifiers
 source 1..2201
 /organism="Homo sapiens"
 /cell_line="MRC-5 V2"
 /cell_type="Fibroblast"
 /sequenced_mol="cDNA to mRNA"
 /tissue_lib="lambda ZAP II"
 CDS 73..1422
 /note="49 kDa protein; NCBI gi: 347314"
 /codon_start=1
 /db_xref="PID:g347314"
 /translation="MMLGTEGGEGFVVKVRGLPWSCSADEVQRFFSDCKIQNGAQGIR
 FIYTREGRPSGEAFVELESEDEVKLALKKDRETMGHRYVEVFKSNNVEMDWVLKHTGP
 NSPDTANDGFVRLRGLPFGCSKEEIVQFFSGLEIVPNGITLPVDFQGRSTGEAFVQFA
 SQEIAEKALKKKERIGHRYIEIFKSSRAEVRTHYDPPRKLMMQRPGPYDRPGAGRG
 YNSIGRGAGFERMRRGAYGGGYGGYDDYNGYNDGYGFGSDRFGRDLNYCFSGMSDHRY
 GDGGSTFQSTTGHCVHMRGLPYRATENDIYNFFSPLNPVRVHIEIGPDGRVTGEADVE
 FATHEDAVAAMSKDKANMQHRYVELFLNSTAGASGGAYEHRYVELFLNSTAGASGGAY
 GSQMMGGMGLSNQSSYGGPASQQLSGGYGGGYGGQSSMSGYDQLQENSSDFQSNIA"

Trp185

LOCUS HSU38847 5173 bp mRNA PRI 14-FEB-1996
DEFINITION Human TAR RNA loop binding protein (TRP-185) mRNA, complete cds.
ACCESSION U38847
REFERENCE 1 (bases 1 to 5173)
AUTHORS Wu-Baer,F., Lane,W.S. and Gaynor,R.B.
TITLE The cellular factor TRP-185 regulates RNA polymerase II binding to HIV-1 TAR RNA
JOURNAL EMBO J. 14, 5995-6009 (1995)
REFERENCE 2 (bases 1 to 5173)
AUTHORS Wu-Baer,F. and Gaynor,R.B.
TITLE Direct Submission
JOURNAL Submitted (17-OCT-1995) Foon Wu-Baer, Internal Medicine, UT Southwestern Medical Center, 5323 Harry Hines Blvd., Dallas, TX 75235-8594, USA
COMMENT Trp185 binds to TAR RNA and thereby modulates the binding of RNA polymerase II [1].
NCBI gi: 1184691
FEATURES Location/Qualifiers
source 1..5173
/organism="Homo sapiens"
CDS 1..4866
/gene="TRP-185"
/note="Method: conceptual translation supplied by author.; TRP-185; NCBI gi: 1184692"
/codon_start=1
/product="TAR RNA loop binding protein"
/db_xref="PID:g1184692"
/translation="MEWVLAEEALLSQSRDPRALLGALCQGEASAERVETLRFLLQRLE DEEARSGGGAGALPEAAREVAAGYLVPPLLRSRGRPAGGGPSLQPRHRRRVLRAAGA ALRSCVRLAGRQLAAALAAEALRDLLLAGWRAPGAAAEVLAAVGPCLRPREDGPLL ERVAGTAVALALGGGGDGDEAGPAEDAALVAGRLLPVLVQCGGAALRAVWGGLAAPG ASLGSGRVEEKLLVLSALEKLLPEPGGDRAARGAREAGPDARRCWRFWRTVQAGLGQA DALTRKRARYLLQRAVEVSAELGADCTCGPQEONGPSLFWWSERKKDELLKFWE NYIL IMETLEGNQIHVIKPVLPKLNLLFEYAVSEENGCWLFHPSWHMCIYKRMFESENKILS KEGVIHFLEYETKILPFSPEFSEIFIIGPLMDALSESSLYSRSPGQPIGSCSPLGLKL QKFLVTYISLPLPEEIKSSFLLK FIRKMTSRHWCAVPIFLSKALANPRHKALGIDGL LALRVDIHCTMITHQILLRGAAQCYLLQTAMNLLDVEKVSLSDVSTFLMSLRQEE SLRG RTSLWTELCDWL RVN ESYFKPSPTCSSIGLHKTSLNAYVKSIVQ EYVKSSAWETGEN CFMPDWFEAKLVSLMVLLAVDVEGMKTQYSKGKQRTENVLRIFLDPLLDVLMKFSTNAY MPLLKTDRC LQ LNLNTCR LGKSSAQDDEVSTV LQNFFMSTTESISEFILRRLT MN ELNSVSDL DRCHLYL MVLT EINLHL KVGVKRGNP I W RVIS L LKNASIQHLQEMDSQ EPTVGSQIQRVVSMA ALAMVCE AIDQKPELQ L DS LHAGPLESFLSSLQLNQ TLQKPH AEEQSSYAHPLECSSVLEESSSSQGWGKIVA QYIH DQWVCLSFLKKYHTLIP TTGSE I LEPFLPAVQMPIRTLQSALEALT VLS SDQVLPV FHCLKVLV FKLLT SSES CIES FDM AWKIISSLSNTQLI FWANLKAFVQFVFDNKVL TIAAKIKGQAYFKIKEIMYKII EMSA IKTGVFTNLISYCCQSIVSASNVSQGSLSSAKNYSELILEACIFGTVFR RDQRLVQD VQTFIENLGHDC AANIVMENTKREDHYVRICAVKFLCLLDGSNM SHKLFIED LAIK LL DKDELVSKSKRYYVNSLQHRVKNRVWQTL L VFPR LDQNF L NGI IDRI FQAGFTNNQ ASIKYFIEWIIILILHKFPQFLPKFWDCFSYGEENL KTSICTFLAVL SHLDI ITQNI P EKKLILKQALIVLQWC FNHNFSVRLYALVALKKLWTVCKVLSVEEF DALTPVIESSL HQVESMHGAGNAKKNWQRIQEHEFFFATFHPLKDYC LETIFYILPRLSGLIEDEWITID KFTRFTDVPLAAGFQWYLSQTQLSKLPGDWSQQDGTNLV EADNQAEWTDVQKKIIP WNSRVSDLDL ELLFQDRAARLGKSISRLIVVASLIDKPTNLGGLCRTCEVFGASV LV GSLQCISDKQFHLSVSAEQWLPLVEVKPPQLIDYLQQKKTEGYTIIGVEQTA KSDL TQYCFPEKS L L LGN EREGIPANLIQQLDVCVEIPQQGIIRSLNVHVSGALLIWEYTR QQLLSHGDTKP"

LOCUS HUMTCM 1160 bp mRNA PRI 15-JUN-1989
 DEFINITION Human T cell-specific protein (RANTES) mRNA, complete cds.
 ACCESSION M21121
 REFERENCE 1 (bases 1 to 1160)
 AUTHORS Schall,T.J., Jongstra,J., Dyer,B.J., Jorgensen,J., Clayberger,C.,
 Davis,M.M. and Krensky,A.M.
 TITLE A human T cell-specific molecule is a member of a new gene family
 JOURNAL J. Immunol. 141, 1018-1025 (1988)
 MEDLINE 88285659
 COMMENT A chemokine that is found to be a suppressive factor for HIV (Cocchi
 and coworkers, Science 270:1811,1995). See also MIP1A and MIP1B.
 Draft entry and computer-readable sequence for [1] kindly provided
 by A.M.Krensky, 24-OCT-1988.
 NCBI gi: 339420
 FEATURES Location/Qualifiers
 source 1..1160
 /organism="Homo sapiens"
 CDS 27..302
 /note="T cell-specific protein precursor; NCBI gi:
 339421"
 /codon_start=1
 /db_xref="PID:g339421"
 /translation="MKVSAARLAVILIATALCAPASASPYSSTTPCCFAYIARPLPR
 AHIKEYFYTGKCSNPAVFVTRKNRQVCANPEKKWVREYINSLEMS"
 sig_peptide 27..95
 /note="T cell-specific protein signal peptide"
 /codon_start=1
 mat_peptide 96..299
 /note="T cell-specific protein"
 /codon_start=1
 repeat_region 450..950
 /note="Alu-related repeats"

MIP1A

LOCUS HUMMIP1A 775 bp mRNA PRI 28-OCT-1992
DEFINITION Human macrophage inflammatory protein (G0S19-1) mRNA, complete cds.
ACCESSION M23452
REFERENCE 1 (bases 1 to 775)
AUTHORS Blum,S., Forsdyke,R.E. and Forsdyke,D.R.
TITLE Three human homologs of a murine gene encoding an inhibitor of stem cell proliferation
JOURNAL DNA Cell Biol. 9, 589-602 (1990)
MEDLINE 91103879
COMMENT A chemokine that is found to be an HIV suppressive factor (Cocchi et al., Science 270:1811,1995). See also RANTES and MIP1B (sequence not available for the latter).

Draft entry and computer-readable sequence for
[1] kindly submitted
by D.R.Forsdyke, 30-JUN-1989.
The G0S19 genes are members of the 'small inducible' family of genes. The G0S19-1 product is homologous to the alpha subunit of the murine cytokine MIP1.

NCBI gi: 188558
FEATURES Location/Qualifiers
source 1..775
/organism="Homo sapiens"
/cell_type="peripheral lymphocyte"
/sequenced_mol="cDNA to mRNA"
sig_peptide 84..143
/note="G0S19-1 peptide signal peptide"
/codon_start=1
CDS 84..362
/note="G0S19-1 peptide precursor; NCBI gi: 188559"
/codon_start=1
/db_xref="PID:g188559"
/translation="MQVSTAALAVLLCTMALCNQFSASLAADTPTACCFSYTSRQIPQNFIADYFETSSQCSKPGVIFLTKRSRQVCADPSEEWVQKYVSDLELSA"
mat_peptide 144..359
/note="G0S19-1 peptide"
/codon_start=1

LOCUS HSUDGM 1224 bp RNA PRI 12-SEP-1993
 DEFINITION Human mRNA for uracil-DNA glycosylase.
 ACCESSION X52486
 REFERENCE 1 (bases 1 to 1224)
 AUTHORS Caradonna,S.J.
 TITLE Direct Submission
 JOURNAL Submitted (06-MAR-1990) to the EMBL/GenBank/DDBJ databases.
 Caradonna S.J., University of Med. and Dent. of New Jersey, Dept of
 Biochemistry, 675 Hoes Lane, Piscataway New Jersey 08854, U S A
 REFERENCE 2 (bases 1 to 1224)
 AUTHORS Muller,S.J. and Caradonna,S.
 TITLE Isolation and characterization of a human cDNA encoding uracil-DNA
 glycosylase
 JOURNAL Biochim. Biophys. Acta 1088 (2), 197-207 (1991)
 MEDLINE 91159471
 COMMENT The uracil DNA glycosylase is an HIV vpR-binding protein (Bonhamdan
 et al., J. Virol 70:697,1996).
 Data kindly reviewed (07-NOV-1990) by Muller S.J.
 NCBI gi: 37586
 FEATURES Location/Qualifiers
 source 1..1224
 /organism="Homo sapiens"
 /cell_type="T-cell"
 /cell_line="Jurkat"
 /clone_lib="lambda gt11"
 /chromosome="5"
 CDS 80..1060
 /note="uracil-DNA glycosylase; NCBI gi: 37587"
 /codon_start=1
 /db_xref="PID:g37587"
 /translation="MEPLPSFELLSPLREVTLYDALCTAPGPNGVPAQQARSVSSFH
 CVSLSELFPLSWEAPRFFLALPSLPQLPLHPKPSGPASPPPSRQVTAESRKLLSWL
 IPVHRQFGLSFESLCLTVNTLDRFLTTPVLQTASSCLGSPPCSSLANWRCTRRAWK
 QLLALCCGAFSRQQLCNLECIRAAQALHPGCATISFFLTQHLLSAARPPKLWKRKP
 WRRGVAELSLADYAFTSYSPSLLAICCLALADRMLRLAARGLATGRPPGGAGGLYQ
 VAAAGGHKQYFLDSHAARSDLREVQPAPELEIKQILRFLLVPGPAAGPLP"

p56lck

LOCUS HSU23852 2129 bp mRNA PRI 29-NOV-1995
DEFINITION Human T-lymphocyte specific protein tyrosine kinase p56lck (lck)
abberant mRNA, complete cds.
ACCESSION U23852
REFERENCE 1 (bases 1 to 2129)
AUTHORS Vogel,L.B. and Fujita,D.J.
TITLE The SH3 domain of p56lck is involved in binding to
phosphatidylinositol 3'-kinase from T lymphocytes
JOURNAL Mol. Cell. Biol. 13 (12), 7408-7417 (1993)
MEDLINE 94067101
REFERENCE 2 (bases 1 to 2129)
AUTHORS Vogel,L.B. and Fujita,D.J.
TITLE p70 phosphorylation and binding to p56lck is an early event in
interleukin-2-induced onset of cell cycle progression in
T-lymphocytes
JOURNAL J. Biol. Chem. 270 (6), 2506-2511 (1995)
MEDLINE 95155308
REFERENCE 3 (bases 1 to 2129)
AUTHORS Vogel,L.B., Arthur,R. and Fujita,D.F.
TITLE An abberant lck mRNA in two human T-cell lines
JOURNAL Biochim. Biophys. Acta 1264, 168-172 (1995)
REFERENCE 4 (bases 1 to 2129)
AUTHORS Vogel,L.B., Arthur,R. and Fujita,D.F.
TITLE Direct Submission
JOURNAL Submitted (31-MAR-1995) Lee B. Vogel, Developmental Biology, CNRS
Station Biologique, Place Georges-Teissier, Roscoff 29680, France
COMMENT P56lck binds to both the 27 kDa and the 25 kDa isoforms of HIV-1
nef. Nef appears to interfere with the activation of p56lck. (Greenway
et al., J. Virol. 69:1842,1995). Note that this sequence is aberrant.
NCBI gi: 775207
FEATURES Location/Qualifiers
source 1..2129
/organism="Homo sapiens"
/cell_line="Molt-4"
/cell_type="T-lymphocyte"
/chromosome="1"
/map="1p35-p32"
CDS 60..1151
/gene="lck"
/note="truncated form of T-lymphocyte-specific protein
tyrosine kinase p56lck; this abberant message encoding
primarily the SH2 and SH3 domains of p56lck was observed
by nothern hybridization and PCR amplification in poly-A
selected RNA from two human leukemic T-cell lines. NCBI
gi: 775208"
/codon_start=1
/product="p56lck"
/db_xref="PID:g775208"
/translation="MGCGCSSHPEDWMENIDVCENCHYPIVPLDGKGTLIRNGSEV
RDPLVTYEGSNPPASPLQDNLVIALHSYEPSHDGLGFEKGEQLRILEQSGEWWKAQS
LTTGQEGFIPFNFKVAKANSLEPEPWFKNLSRKDAERQLLAPGNTHGSFLIREESTA
GSFSLSVRDFDQNQGEVVKHYKIRNLNGGFYISPRITFPGLHELVRYHTNASDGLCT
RLSRPCQTQKPQPKPWEDEWEVPRETLKLVERLGAGQFGEVWMGYYNGHTKVAVKSLK
QGSMSPDAFLAEANLMKQLQHQQLVRLYAVVTQEPIIITEYMEENGSLVDFLKTPSGI
KLTINKLLDMAAQVRRRLGRGAGQGNRPVT"

LOCUS HSP53G 20303 bp DNA PRI 23-APR-1992
 DEFINITION Human p53 gene for transformation related protein p53 (also called transformation-associated protein p53, cellular tumor antigen p53, and non-viral tumour antigen p53).
 ACCESSION X54156
 REFERENCE 1 (bases 1 to 20303)
 AUTHORS Chumakov,P.M.
 TITLE Direct Submission
 JOURNAL Submitted (02-AUG-1990) to the EMBL/GenBank/DDBJ databases.
 Chumakov P.M., Engelhardt Inst. of Molecular Biology, Academy of Science of the USSR, Vavilov St. 32, 117984 Moscow, USSR
 REFERENCE 2 (bases 1 to 20303)
 AUTHORS Chumakov,P.M., Almazov,V.P. and Jenkins,J.R.
 JOURNAL Unpublished
 REFERENCE 3 (bases 1 to 20303)
 AUTHORS Futreal,P.A., Barrett,J.C. and Wiseman,R.W.
 TITLE An Alu polymorphism intragenic to the TP53 gene
 JOURNAL Nucleic Acids Res. 19 (24), 6977 (1991)
 MEDLINE 92107726
 COMMENT P53 is found to bind HIV-1 nef (Greenway et al., J. Virol. 69: 1842, 1995).
 See also entries K03199, M14690, M14695, X01405, X02469, M22881-4, M22887-8, M22894-8.
 See also Mol. Cell. Biol. 6:1379-1385(1986); and Mol. Cell. Biol. 7:961-963(1987).
 NCBI gi: 35213
 FEATURES Location/Qualifiers
 source 1..20303
 /organism="Homo sapiens"
 /strain="caucasian"
 /chromosome="17p13"
 mRNA join(843..949,11689..11790,11906..11927,12021..12299,
 13055..13238,13320..13432,14000..14109,14452..14588,
 14681..14754,17572..17678,18599..19876)
 /gene="p53"
 prim_transcript 843..19876
 /gene="p53"
 exon 843..949
 /number=1
 intron 950..11688
 /number=1
 exon 11689..11790
 /number=2
 CDS join(11717..11790,11906..11927,12021..12299,13055..13238,
 13320..13432,14000..14109,14452..14588,14681..14754,
 17572..17678,18599..18680)
 /gene="p53"
 /note="NCBI gi: 35214"
 /codon_start=1
 /product="protein p53"
 /db_xref="PID:g35214"
 /translation="MEEPQSDPSVEPPLSQETFSDLWKLLPENNVLSPPLPSQAMDDLM
 LSPDDIEQWFTEDPGPDEAPRMPEAPRVAPAPAAPTPAAPAPAPSWPLSSVPSQKT
 YQGSYGFRLGFLHSGTAKSVTCTYSPALNKMFCQLAKTCPVQLWVDSTPPPGRVRAM
 AIYKQSQHMTTEVVRRCPHHERCSDSGLAPPQHLIRVEGNLRVEYLDDRNTFRHSVVV
 PYEPPEVGSDCTTIHYNYMCNSCMGGMNRRPILTIITLEDSSGNLLGRNSFEVRVCA
 CPGRDRRTEENLRKGEPHHELPPGSTKRALPNNTSSSPQPKKKPLDGEYFTLQIRG
 RERFEMFRELNEALELKDAQAGKEPGGSRAHSSHLSKKGQSTSRRHKKLMFKTEGPDS
 D"

erk1

LOCUS HSERK1 1866 bp RNA PRI 06-SEP-1993
DEFINITION Human ERK1 mRNA for protein serine/threonine kinase.
ACCESSION X60188
REFERENCE 1 (bases 1 to 1866)
AUTHORS Pelech,S.L.
TITLE Direct Submission
JOURNAL Submitted (23-JUN-1991) to the EMBL/GenBank/DDBJ databases. S.L.
Pelech, Biomedical Res Centre, 2222 Health Science Hall, Univ of
British Columbia, Vancouver B C V6T 1Z3, CANADA
REFERENCE 2 (bases 1 to 1866)
AUTHORS Charest,D.L., Mordret,G., Harder,K.W., Jirik,F. and Pelech,S.L.
TITLE Molecular cloning, expression, and characterization of the human
mitogen-activated protein kinase p44^{erk1}
JOURNAL Mol. Cell. Biol. 13 (8), 4679-4690 (1993)
MEDLINE 93330262
COMMENT ERK1, or p44 mapK, a protein involved in intracellular signalling,
binds to HIV-1 27 kDa nef but not to 25 kDa nef (Greenway et al.,
J. Virol. 69:1842,1995).
NCBI gi: 31220
FEATURES Location/Qualifiers
source 1..1866
/organism="Homo sapiens"
/tissue_type="liver tumor"
/cell_type="hepatoblastoma"
/cell_line="HepG2"
/clone_lib="HepG2"
/clone="p26a-Beta-3"
/chromosome="16"
mRNA 1..1866
/gene="ERK1"
/evidence=experimental
CDS 73..1212
/gene="ERK1"
/note="NCBI gi: 31221"
/codon_start=1
/product="protein serine/threonine kinase"
/db_xref="PID:g31221"
/translation="MAAAAQGGGGEPRRTEGVPGVPGEVEMVKGQPFVGPRYTQLQYIGEGAYGMVSSAYDHVRKTRVAIKKISPFEHQTYCQRTLREIQILLRFRHENVIGIRDILRASTLEAMRDVYIVQDLMETDLYKLLKSQQLSNDHICFLYQILRGLKYIHSA NVLHRDLKPSNLLSNTTCDLKICDFGLARIADPEHDHTGFLTEYVATRWYRAPEIMLN SKGYTKSIDIWSVGCILAEMSNSRPIFPGKHYLDQLNHILGILGSPSQEDLNCIINMK ARNYLQSLPSKTKVAWAKLFPKSDSKALDLLDRMLTFNPNKRTVEEALAHPYLEQYY DPTDEPVAAEPFTFAMELDDLPKERLKELIFQETARFQPGVLEAP"

LOCUS HUMHCKA 2015 bp mRNA PRI 08-NOV-1994
 DEFINITION Human hemopoietic cell protein-tyrosine kinase (HCK) gene, complete
 cds, clone lambda-a2/1a.
 ACCESSION M16591
 REFERENCE 1 (bases 1 to 2015)
 AUTHORS Quintrell,N., Lebo,R., Varmus,H., Bishop,J.M., Pettenati,M.J., Le
 Beau,M.M., Diaz,M.O. and Rowley,J.D.
 TITLE Identification of a human gene (HCK) that encodes a
 protein-tyrosine kinase and is expressed in hemopoietic cells
 JOURNAL Mol. Cell. Biol. 7 (6), 2267-2275 (1987)
 MEDLINE 87257942
 COMMENT Hck is a member of the Src family kinases that binds to HIV-1 nef
 PxxP motifs (SH3 mediated interaction). Hck from U937 cells precipitated by nef (Saksela et al., EMBO J.14: 484, 1995 and EMBO J. 14: 5006, 1995).
 NCBI gi: 183911
 FEATURES Location/Qualifiers
 source 1..2015
 /organism="Homo sapiens"
 mRNA <1..2015
 /note="HCK mRNA"
 CDS 169..1686
 /gene="HCK"
 /map="20q11-q12"
 /note="protein-tyrosine kinase; NCBI gi: 306832"
 /codon_start=1
 /db_xref="GDB:G00-119-303"
 /db_xref="PID:g306832"
 /translation="MGSMKSFLQVGGNTFSKTETSASPHCPVYVPDPTSTIKPGPNS
 HNSNTPGIREAGSEDIIVVALYDYEAIHHEDLSFQKGDQMVVLEESGEWWKARSLATR
 KEGYIPSINYVARVDSLETTEWFFKGISRKAERQLLAPGNMLGSFMIRDSETTKGSYS
 LSVRDYDPRQGDTVKHYKIRTLNGGFYISPRSTFSTLQELVDHYKKGNDGLCQKLSV
 PCMSSKPQKPWEKDAWEIPRESLKLEKKLGAGQFGEVWMATYNKHTKVAVKTMPGSM
 SVEAFLAEANVMKTLQHDKLVLHAVVTKEPIYIITEFMAKGSLLDFLKSDEGSKQPL
 PKLIDFSAQIAEGMAFIEQRNYIHRDLRAANILVSASLVCKIADFGALARVIEDNEYTA
 REGAKFPIKWTAPEAINFGSFTIKSDVWSFGILLMEIVTYGRIPYPGMSNPEVIRALE
 RGYRMPRPENCPEELYNIMMRCWKNRPEERTFEYIQSVLDDFYTATESQYQQQP"

lyn

LOCUS HUMLYN 2298 bp mRNA PRI 07-JAN-1995
DEFINITION Human lyn mRNA encoding a tyrosine kinase.
ACCESSION M16038
SOURCE Human cDNA to mRNA.
REFERENCE 1 (bases 1 to 2298)
AUTHORS Yamanashi,Y., Fukushige,S., Semba,K., Sukegawa,J., Miyajima,N., Matsubara,K., Yamamoto,T. and Toyoshima,K.
TITLE The yes-related cellular gene lyn encodes a possible tyrosine kinase similar to p56lck
JOURNAL Mol. Cell. Biol. 7 (1), 237-243 (1987)
MEDLINE 87172710
COMMENT Lyn is a member of the Src family kinases that binds to nef through PxxP motifs (SH3-mediated interaction) (Saksela et al., EMBO J. 14: 484, 1995).
NCBI gi: 187268
FEATURES Location/Qualifiers
source 1..2298
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CDS 298..1836
/gene="LYN"
/map="8q13-qter"
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/db_xref="PID:g307144"
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